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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/637,397	08/11/2000	Cary Lee Bates	ROC920000093US1	7305

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EXAMINER

BOCCIO, VINCENT F

ART UNIT	PAPER NUMBER
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2616

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Technology Center 2600

Office Action Summary

Application No.

09/637,397

Applicant(s)

BATES ET AL.

Examiner

Vincent F. Boccio

Art Unit

2616

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: ____ |

Art Unit: 2616

DETAILED ACTION

The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 2616.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-2, 4-8, 10-16, 18-21, are rejected under 35 U.S.C. 102(e) as being anticipated by Kitsukawa (US 6,282,713).

Regarding claims 1 and 8, Kitsukawa in Fig. 3 meets the limitations of a recording system recording presentable data accessed thru interactive links displayed by an interactive TV program, the system comprising:

- an interactive TV recording device (col. 6, "selection of a broadcast for automatic recording");
- an interactive TV transceiver (Fig. 3, "2") for receiving an interactive TV signal (col. 5, "header that identifies ... advertising data"),
- including at least one interactive Link associated with presentable data (col. 3, "data links to advertising information");
- a writing device for writing the interactive TV signal to a first storage and writing presentable to a second and in response to a record input (col. 6, recording function);
- the system accesses the presentable data (col. 7, "in store Ad mode"), associated with the link and records the Video, links and Ad data

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to storage, since the first and second are claimed to be different or the same, the mere storage of all information as claimed is met.

Regarding claim 2, Kitsukawa further meets the limitation of separately recording the interactive TV signal and the link information (col. 4, video to disk, col. 6, links SRAM 36, advertising SRAM 51), but, it is noted that the storage medium, now a second in addition to a first medium, are not claimed to be separated from each other, but, read on multiple storage locations, which each location is separate from each other or wherein each data has its own area is a medium.

Regarding claims 4, 10 and 18, upon a play operation from the user the interactive Tv signals are retrieved from storage, wherein in response to link the presentable data is displayed, even to another link, wherein more presentable data, would be downloaded, stored and rendered, reference claim 6 etc. below.

Regarding claims 6, 7, 12, 20-21, Kitsukawa further meets the limitations of wherein upon playback the AD info, can include another interactive link (col. 8, lines 50-60, "Ad info. may include ... electronic links over the internet to the Web pages of product manufactures and dealers"), therefore, upon selecting, storing the additional Web pages, therefore separately storing the presentable data to storage in addition to previously stored data, from a WEB site.

Regarding claim 13, Kitsukawa further meets the limitation of a set top box, provides for a network communication device for accessing a WEB site from a network (col. 8, "links to additional Web pages from displayed Ad info."), further provides disk storage which is coupled to the set top box in order to receive, record and reproduce data to and from storage or the mediums.

Regarding claim 14, Kitsukawa further meets the limitation of wherein the interactive TV system is a set-top box, as shown in (Fig. 2, "2"), having a signal processor (Fig. 3), wherein the processor processes the signals for display and recording and reproduction and provides for a communication to a network (WEB page access) relates to links and since but fails to particularly show wherein the SET top Box is coupled {} to the interactive TV

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recording device, interpreted as coupled thereto, or outside the STB.

Claims 5, 10-11, are analyzed and discussed with respect to the claims above.

Claims 15-16 and 18-19 are analyzed and discussed with respect to the claims above, but, the claims recite an additional limitation, such as a program product comprising:

O a control program for performing the steps as recited (met by Fig. 3, "CPU", with program, col.5, line 56 to col. 6-, CPU with control program facilitate the steps of operation the program in memory, code stored in memory 37).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 3, 9, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitsukawa et al. (US 6,282,713).

Regarding claims 3 and 9, Kitsukawa discloses recording the interactive the links and presentable data in a recording mode,

but fails to disclose recording to tape, recording the interactive TV program and at least one link on a first track and recording the presentable data elsewhere on the tape.

The examiner takes official notice that recording various information various areas, such as the video tracks, control tracks or areas, is well known, therefore, it would have been obvious to one skilled in the art at the time of the invention modify Kitsukawa by recording to a tape type medium the Interactive TV signal and the links, starting from a first track and to also pre-store or simultaneously record, the presentable data (WEB content), on the tape type medium in a location other the location of the interactive TV signal and Links, being an obvious design choice to store and utilize a tape type recording medium and various well known obvious areas to record to and create the data structure as claimed, as is considered to be obvious to one skilled in the art.

Claim 17 is analyzed and discussed with respect to the claims above.

Contact Fax Information

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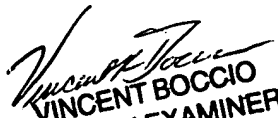
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Contact Information

1. Any inquiry concerning this communication or earlier communications should be directed to the examiner of record, Monday-Thursday, 8:00 AM to 5:00 PM Vincent F. Boccio (703) 306-3022.

Any inquiry of a general nature or relating to the status of this application should be directed to Customer Service (703) 306-0377.

Primary Examiner, Boccio, Vincent
8/18/04


VINCENT BOCCIO
PRIMARY EXAMINER

Notice of References Cited	Application/Control No. 09/637,397	Applicant(s)/Patent Under Reexamination BATES ET AL.	
	Examiner Vincent F. Boccio	Art Unit 2616	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,282,713 B1	08-2001	Kitsukawa et al.	725/36
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N	WO 98/485566	10-1998	PCT	Mankovitz	Ho4N
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04N	A2	(11) International Publication Number: WO 98/48566 (43)-International Publication Date: 29 October 1998 (29.10.98)
<p>(21) International Application Number: PCT/US98/08305</p> <p>(22) International Filing Date: 20 April 1998 (20.04.98)</p> <p>(30) Priority Data: 60/044,161 21 April 1997 (21.04.97) US 60/052,248 11 July 1997 (11.07.97) US</p> <p>(71) Applicant (for all designated States except US): GEMSTAR DEVELOPMENT CORPORATION [US/US]; 135 North Los Robles #870, Pasadena, CA 91101 (US).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): MANKOVITZ, Roy, J. [US/US]; 18057 Medley Drive, Encino, CA 91316 (US).</p> <p>(74) Agent: RAHN, LeRoy, T.; Christie, Parker & Hale, LLP, P.O. Box 7068, Pasadena, CA 91109-7068 (US).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>Without international search report and to be republished upon receipt of that report.</i></p>
<p>(54) Title: METHOD AND APPARATUS FOR TIME-SHIFTING VIDEO AND TEXT IN A TEXT-ENHANCED TELEVISION PROGRAM</p> <p>(57) Abstract</p> <p>A television system allows a viewer of a text-enhanced television program to pause the program at a particular frame, browse the enhancements at his or her leisure, and then resume viewing the program from that frame, without losing continuity of the video and enhancement portions of the program or program content. This is accomplished by time-shifting the television program for later playback.</p>		

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METHOD AND APPARATUS FOR TIME-SHIFTING VIDEO AND TEXT IN A
TEXT-ENHANCED TELEVISION PROGRAM

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CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of provisional patent application serial no.
60/044,161, filed April 21, 1997, and provisional patent application serial no. 60/052,248,
10 filed July 11, 1997, the disclosures of which are hereby fully incorporated by reference.

BACKGROUND

The present invention is a system wherein television program-related information
15 (PRI) is embedded in the vertical blanking interval (VBI) of a television signal for display on
a viewer's television screen at the same time as the television program. The PRI is typically
contained in an Internet site, the addresses for which are embedded in the television signal.
The Internet site addresses may also be transmitted synchronously with, but separate from the
20 video portion, e.g., via an interface device such as a telephone or cable modem. Typically
such an "enhanced" television program consists of a display with the video portion of the
program in a picture-in-picture (PIP) window and the PRI in the remaining portion of the
display area of the television screen.

25 This PRI may be any textual or graphic information associated with the current
television program. The PRI may consist of a textual display of a World Wide Web (WWW)
or other Internet site address to which the viewer can choose to link to through a connection
with an Internet Service Provider. Alternatively, the PRI may be contained in one or more
30 Web pages, the addresses of which are inserted into the vertical blanking interval (VBI) and
are automatically retrieved by the user's terminal and displayed on the display screen. Some
examples of PRI are cast members' biographies, trivia about the show, information relating to
the particular episode or scene, and closeups of information that cannot be readily seen or is
35 hidden in the video portion of the program. Some of the PRI may be time dependent on the
program. For example, the PRI may change to correspond to a particular scene or frame of

1 the television program.

5 With so much information on the screen, some of which may be changing at a fairly rapid pace, it is desirable to provide the viewer the option of pausing a particular frame of a text-enhanced program display and then resume viewing the program without losing continuity of the video and PRI portions of the program or program content.

10 According to one embodiment of the invention, a television system is provided which allows a viewer of a PRI-enhanced television program to pause the program at a particular frame, examine the PRI at his or her leisure, perhaps browse through other, linked Web pages, and then resume viewing the program from that frame, without losing continuity of
15 the video and PRI portions of the program or program content.

SUMMARY

20 According to one embodiment of the invention, an apparatus for time-shifting video and program related information (PRI) in an enhanced television program is provided which includes a display screen, a tuner for receiving a television signal with embedded data representative of an address for an Internet site including PRI, means for extracting the
25 embedded data from the television signal, a memory for storing the embedded data, input means for inputting viewer commands, a time-shifting apparatus capable of simultaneously storing the television signal as it is received and outputting the stored television signal for display, means for communicating with an Internet service provider to retrieve information
30 from the Internet site including the PRI, and a microcontroller. The microcontroller is configured to retrieve the Internet site address from memory and retrieve the PRI from the Internet site in response to a first viewer command, generate a composite display including a television program contained in the television signal in a first portion of the display and the
35 PRI in a second portion of the display in response to the first viewer command. control the time-shifting apparatus to store the television signal as it is received and display a still frame from the stored television signal in a first portion of the display screen in response to a

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second viewer command, and control the time-shifting apparatus to output the portion of the
stored television signal subsequent to the still frame for display in the first portion of the
5 display in response to a third viewer command.

According to another embodiment, a method for time-shifting video and program
related information (PRI) in an enhanced television program is provided which includes the
steps of receiving a television signal with embedded data representative of an address for an
10 Internet site including PRI, extracting the embedded data from the television signal, storing
the embedded data in a memory, selecting an Internet mode in response to a first viewer
command, communicating with an Internet service provider to retrieve information from the
Internet site including the PRI, displaying a television program contained in the television
15 signal in a first portion of a display screen and the PRI in a second portion of the display
screen, storing the television signal in a time-shifting apparatus and continuously displaying a
still frame from the stored television signal in response to a second viewer command, and
20 simultaneously displaying the television program subsequent to the still frame from the
stored television signal and continuing to store the television signal as it is received in
response to a third viewer command.

According to an alternate embodiment, one or more suspend flags are embedded in the
25 television signal, and the "pause" operation wherein the television signal is stored in the time-
shifting apparatus and the still frame displayed in response to detection of such a suspend
flag. This feature may be deactivated such that the "pause" operation is only performed in
30 response to a viewer command.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing features and advantages of the invention will be better understood by
35 referring to the following drawings:

FIG. 1 is a schematic block diagram of a time-shifting apparatus according to one
embodiment of the invention;

1 FIG. 2 is a display screen in an Internet mode of the time-shifting apparatus;

FIG. 3 is a display screen accessed by the viewer from the display screen of FIG. 2;

5 and

FIG. 4 is an alternate layout of the display screens of FIGS. 2 and 3.

10 DETAILED DESCRIPTION

In FIG. 1, the reference numerals refer to the same elements described in application Serial No. 08/475,395 filed on June 6, 1995, the disclosure of which is incorporated fully herein by reference. In addition, the system includes 1) an Internet service provider 33
15 connected to microprocessor 24 by a transmission link 34 such as a telephone network or a television cable. 2) a VBI decoder 35, 3) a website data memory 36 (memory 36 could be part of the RAM of microprocessor 24 or in terms of the disclosure of the '395 application. memory 22), and 4) a digital Storage Device 52 with associate analog-to-digital and digital-
20 to-analog converters 50, 54. An interface device such as a telephone or cable modem (not shown) couples transmission link 34 to microprocessor 24, if necessary. Internet service provider 33 is connected to an Internet backbone in well known fashion to access data at any site on the WWW.

25 Storage device 52 is a television signal time-shifting apparatus. One such time-shifting apparatus is disclosed in U.S. patent application Serial No. 08/388,345 to Russo, et al. filed February 14, 1995, which is fully incorporated herein. Such a time-shifting
30 apparatus includes an optical disc for storage of video programs and separate READ and WRITE heads which operate simultaneously such that real time program information can be stored on the disc while previously stored information on the disc can be read and output to the television signal for display. Other storage media which are capable of rapidly storing
35 extremely large amounts of information may also be used, including magnetic tape, optical disk, magneto-optical disk, or solid state memory (i.e., a high capacity charge coupled device), video RAM, etc.

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The Storage Device 52 holds a large video data buffer (not shown) for storing the television program in digital form. Preferably, the Storage Device is a random access storage medium allowing concurrent reading and writing operations, so that the incoming television signal data may be written to the Storage Device while earlier stored television signal data is being read out for display on TV 20 (that is, time-shifting of the television signal data is performed). The Storage Device 52 has two heads that are separately positionable. When display of the television program is to be suspended, the read head is kept in the same position until a resume command is received. The write head, however, keeps moving to record the incoming television signal data.

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To enable a television viewer to access information about a television program that the viewer is watching, PRI is embedded in the VBI of the television signal carrying the television program. For example, the PRI may be textual information regarding actors and actresses in the show, advertisements of program-related merchandise, brief descriptions of the plot of future episodes of the television program, or any other text regarding the television program, or the PRI may be text representing web pages containing such information.

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According to a preferred embodiment, the PRI is contained on a web page, the address for which is embedded in the VBI of the television signal. When the television signal carrying the program being watched is captured by tuner 11, the website data embedded in its VBI is stripped out by VBI decoder 35 and sent to microprocessor 24 for storage in website data memory 36. The memory addresses of the website names are linked to the website addresses in memory 36. An icon appears on the screen of television 20 when the television program is displayed full screen, i.e., in the TV mode, to inform the viewer that website data accompanies the television signal and is stored in memory 22. If the viewer wishes to access a website in connection with the television program, the viewer presses a button on a viewer input device 28 such as a remote controller, which introduces the Internet mode of operation shown in FIG. 2 and described below. Microprocessor 24 is programmed to carry out this operation. By repeatedly pressing a button on the viewer input device, the viewer can toggle

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back and forth between the TV mode and the Internet mode. Although viewer inputs are
discussed herein as initiated by buttons on a remote controller, other input devices can also be
5 used. For example, a cursor could be displayed on the television screen which is movable
around the screen and a selection can be made (i.e., "clicked") when the cursor is in a desired
location of the screen.

10 In the Internet mode, the video portion of the television program last viewed in the TV
mode is displayed in area 42. As an option, a textual description of the program is displayed
in an area 44 and information about the television program, i.e., program title, station name,
and channel number are displayed in a banner 49 underneath areas 42 and 44. A message is
15 displayed at the top of an area 46 to prompt the viewer to select from a number of website
names displayed in area 46 by moving a cursor 48 with arrow keys on the viewer input
device. For example, if the television program is a serial television show, for example,
"Married With Children," the website names could be information related to the show. After
20 a website name is selected, the viewer presses a button on the viewer input device. As a
result, the website address to which the selected website name is linked is retrieved from
memory 36 by microprocessor 24 and sent through the telephone or cable interface to
Internet service provider 33. (If desired, this function of microprocessor 24 could be carried
25 out by commercial equipment sold under the trademark WEB TV.) The information at the
addressed website is downloaded from Internet service provider 33 over link 34 to
microprocessor 24 and then displayed on the screen simultaneously with the television
30 program to which the information relates, as illustrated in FIG. 3, after being composed by
video processor 30. As illustrated in FIG. 3, the name of the website can be displayed above
the text of the information from the website. If the television program is a serial television
show, as previously stated, the displayed information could include information about the
35 episode, cast biographies, and trivia related to the show. The viewer then navigates about the
website in the manner dictated by the viewer's software to find the desired information.

An alternative layout of the television screen for the present invention is shown in

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FIG. 4. In this layout, the television program is displayed in a majority portion 60 of the screen while the PRI is displayed along two border regions 62. The Web page including the PRI can be specifically configured to display the PRI in the border regions and an area designated for the real time image in the PIP. The PIP circuitry 19 is specially configured to a smaller reduction ratio, for example 1.5:1 rather than 3:1 for a standard PIP, in order to produce the larger PIP display.

The screen portion 60 displays a television program consisting of moving images.

Referring back to FIG. 1, when the viewer interacts with the website data or other PRI displayed on the television screen, the viewer's attention is diverted from the television program being shown to the website data. The viewer is then missing what is happening in the television program until the viewer's interaction with the PRI is concluded. To overcome this situation, an additional component, Storage Device 52, described above, is added to the system to "time-shift" the display of the television program. As the television signal is being received by Tuner 11, the signal is forwarded through IF Amp 12 and Picture DET 13 to VCR 17. The VCR sends the signal through an analog to digital converter (A/D) 50 to Storage Device 52. The Storage Device is under the control of the Microprocessor 24 and is capable of storing the incoming television signal in real-time as digital information for future use.

As the television signal is being stored, if a viewer wants to interact with the PRI such as website data or other textual information being displayed on the television screen, the viewer sends a command to the microprocessor 24 via the viewer input device 28. The viewer action to send the command could, for example, consist of pushing a button on the viewer input device. In response, the microprocessor 24 controls VCR 17 to output the television signal to the Storage Device 52 which begins storing the television signal, including the PRI information embedded in the VBI. The Storage Device 52 simultaneously outputs the first stored frame of the video signal to the signal processing unit for extended display on television 32. The television 32 continues to display this frame until controlled by

1 the viewer to continue without effect on any viewer activity with the PRI shown in the
remainder of the display screen. The viewer then interacts with the PRI as described above.

5 When the viewer is done interacting with the PRI, the viewer sends a command to the
microprocessor 24 to resume display of the television program. However, instead of
displaying the incoming television signal from Tuner 11, the VCR directs the delivery of the
10 stored television signal data output from the READ head of Storage Device 52 through
Digital-to-Analog Converter (D/A) 54 and SW 18 to PIP 19 for display on TV 20. The data
displayed is that part of the television program immediately subsequent to the point of
suspension. That is, it has been time-shifted. The incoming television signal data continues
15 to be stored by the WRITE head of the Storage Device 52 in a time-ordered manner
regardless of the functioning of the READ head. In other words, when display of the
television program is to be suspended, the READ head is kept in the same position until a
resume command is received. The WRITE head, however, keeps moving to record the
20 incoming television signal data. Hence, at this time the data being stored is not the same data
that is being displayed; there is a time lag between the two sets of data. In this manner, the
viewer may continue watching the program without losing continuity of the program or PRI
content. The viewer can position a cursor and enter input to freeze the display of the
25 television program image on command.

In another embodiment, the PRI is contained on several web pages, each
corresponding to a particular portion of the program and transmitted chronologically
30 throughout the duration of the program. The television signal including the embedded
website addresses is stored on the Storage Device 52 and hence the corresponding Web pages
remain linked to the appropriate portion of the television program as the signal is read out
from the Storage Device 52 after a "pause" operation. In this manner, the viewer may
35 continue watching the program without losing continuity of the program or PRI content.

The audio portion of the television signal is also stored in the Storage Device along
with the video portion. When the live television program is put into a "freeze" frame state,

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the audio portion of the television program is also suspended and not transmitted to the
viewer. Instead, the audio portion is stored. When display of the suspended television
5 program is resumed, the audio data is obtained from the Storage Device along with the video
portion and forwarded by VCR 17 through Sound Amp 15 and loudspeaker 16 to the viewer.

In another embodiment, the television signal is already in digital form, such as for
10 high-definition digital television (HDTV). Therefore, an analog to digital conversion is
unnecessary. The Storage Device continuously stores the television signal in a wraparound
fashion whenever the system is operational, overwriting the oldest previously stored
television signal data when the Storage Device becomes full. The Storage Device should be
15 large enough to hold two to three hours of television programming before overwriting earlier
broadcast television signal data.

The present invention allows a viewer to interrupt his or her viewing of a television
program to interact with PRI carried in the VBI of the television signal and displayed on the
20 television screen, and yet rejoin the television program at a later point in time without
missing any of the program.

In another embodiment, the display of the incoming television signal may be
25 suspended automatically by inserting a suspend flag into the VBI, rather than by an explicit
action by the viewer. When the suspend flag is detected by the microprocessor 24 after
decoding by VBI decoder 35, the microprocessor instructs the VCR via a control link (not
shown) to suspend the current display of the television signal. Resumption of display of the
30 television program is commenced by viewer input. The viewer could also override the
automatic suspension feature provided by the suspend flag by setting a predetermined control
value to override all automatic suspend flags, or by entering viewer input when the
suspension activity occurs in order to rapidly rejoin the television program in progress.
35 Alternatively, a resume flag is inserted into the VBI at a predetermined time after the suspend
flag. When the resume flag is received, the microprocessor automatically controls the VCR
to resume display of the television program.

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According to yet another embodiment, the viewer may access the information as any other storage media, such as a video tape, and pause, rewind, or fast forward to different portions of the program stored on the disc after the initially "pause" command. It may be desirable to continuously record the program on the time-shifting apparatus 46 regardless of a viewer "pause" command to allow for these functions over a period of time, limited only by the storage capacity of the time-shifting device.

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Although the present invention has been described with respect to particular embodiments, those skilled in the art will appreciate that the present invention may be modified without departing from the scope of the invention. Accordingly, all such modifications are intended to be included within the scope of the invention as defined by the following claims.

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CLAIMS:

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1. Apparatus for time-shifting video and program related information (PRI) in an enhanced television program comprising:

a display screen;

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a tuner for receiving a television signal with embedded data representative of an address for an Internet site including PRI;

means for extracting the embedded data from the television signal;

a memory for storing the embedded data;

input means for inputting viewer commands;

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a time-shifting apparatus capable of simultaneously storing the television signal as it is received and outputting the stored television signal for display;

means for communicating with an internet service provider to retrieve information from the internet site including the PRI; and

20

a microcontroller comprising

means for retrieving the internet site address from memory and retrieving the PRI from the internet site in response to a first viewer command;

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means for generating a composite display including a television program contained in the television signal in a first portion of the display and the PRI in a second portion of the display in response to the first viewer command,

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means for controlling the time-shifting apparatus to store the television signal as it is received and display a still frame from the stored television signal in a first portion of the display screen in response to a second viewer command, and

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means for controlling the time-shifting apparatus to output the portion of the stored television signal subsequent to the still frame for display in the first portion of the display in response to a third viewer command.

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2. The apparatus of claim 1 wherein the time-shifting apparatus is an optical disc.

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3. The apparatus of claim 1 wherein the time-shifting apparatus is a solid state memory.

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4. The apparatus of claim 1 wherein the PRI comprises text and graphics related to the television program.

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5. The apparatus of claim 4 wherein the PRI comprises a plurality of website addresses.

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6. The apparatus of claim 5 wherein the microcontroller comprises means for retrieving information from one of said plurality of website addresses in response to a fourth viewer command.

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7. The apparatus of claim 1 wherein the first portion of the display covers a minor portion of the display screen and the second portion of the display covers a major portion of the display screen.

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8. The apparatus of claim 1 wherein the first portion of the display covers a major portion of the display screen and the second portion of the display covers a minor portion of the display screen.

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9. The apparatus of claim 1 wherein the means for communicating with the internet service provider is a modem.

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10. A method for time-shifting video and program related information (PRI) in an enhanced television program comprising the steps of:

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receiving a television signal with embedded data representative of an address for an internet site including PRI;

extracting the embedded data from the television signal;

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storing the embedded data in a memory;

selecting an internet mode in response to a first viewer command;

communicating with an internet service provider to retrieve information from the internet site including the PRI;

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displaying a television program contained in the television signal in a first portion of a display screen and the PRI in a second portion of the display screen;

storing the television signal in a time-shifting apparatus and continuously displaying a still frame from the stored television signal in response to a second viewer command; and

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simultaneously displaying the television program subsequent to the still frame from the stored television signal and continuing to store the television signal as it is received in response to a third viewer command.

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11. The method of claim 10 wherein the PRI comprises a plurality of website addresses and further comprising the steps of:

selecting one of the plurality of website addresses in the PRI;

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retrieving information from the selected website address; and

displaying the information from the selected website address.

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12. A method for time-shifting video and program related information (PRI) in an enhanced television program comprising the steps of:

receiving a television signal with embedded data representative of an address for an internet site including PRI and a suspend flag;

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extracting the embedded data from the television signal;

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storing the embedded data in a memory;

selecting an internet mode in response to a first viewer command;

communicating with an internet service provider to retrieve information from the internet site including the PRI;

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displaying a television program contained in the television signal in a first portion of a display screen and the PRI in a second portion of the display screen;

detecting the suspend flag;

15

storing the television signal in a time-shifting apparatus and continuously displaying a still frame from the stored television signal; and

simultaneously displaying the television program subsequent to the still frame from the stored television signal and continuing to store the television signal as it is received in response to a second viewer command.

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13. The method of claim 12 wherein the step of storing television signal in the time-shifting apparatus is performed in response to detecting the suspend flag.

25

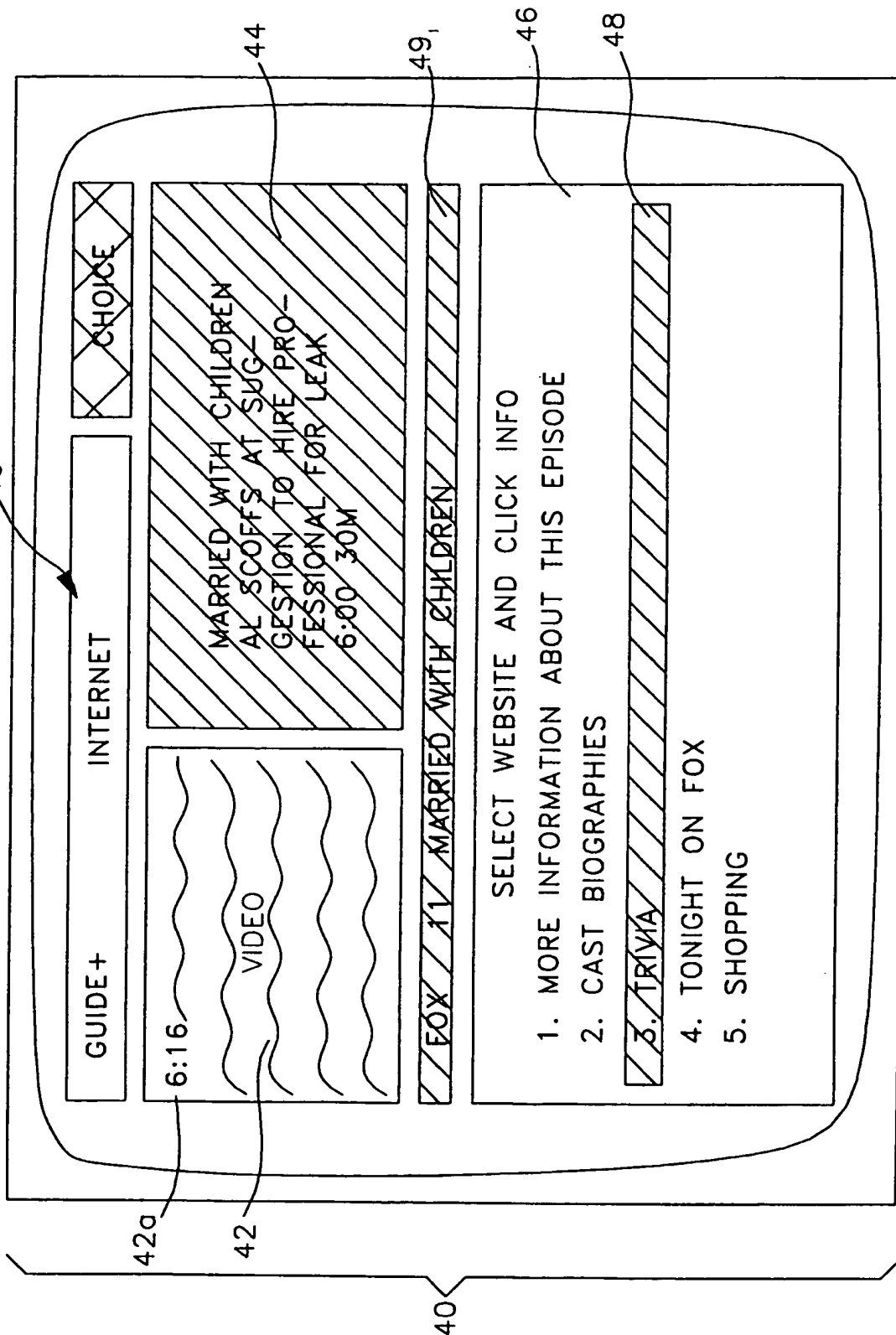
14. The method of claim 12 wherein the step of storing the television signal in the time-shifting apparatus is performed in response to a third viewer command.

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35

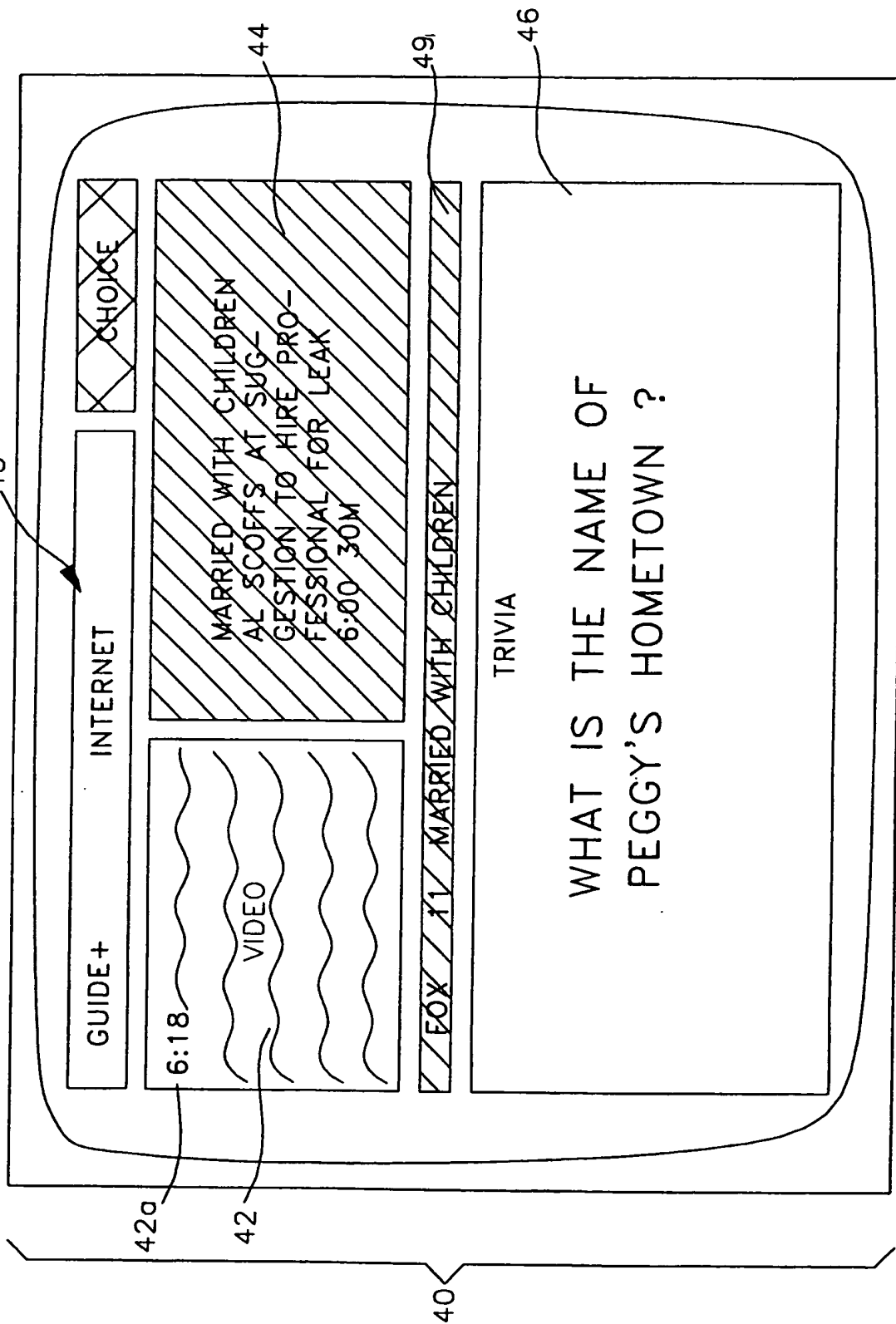
2/4

FIG. 2



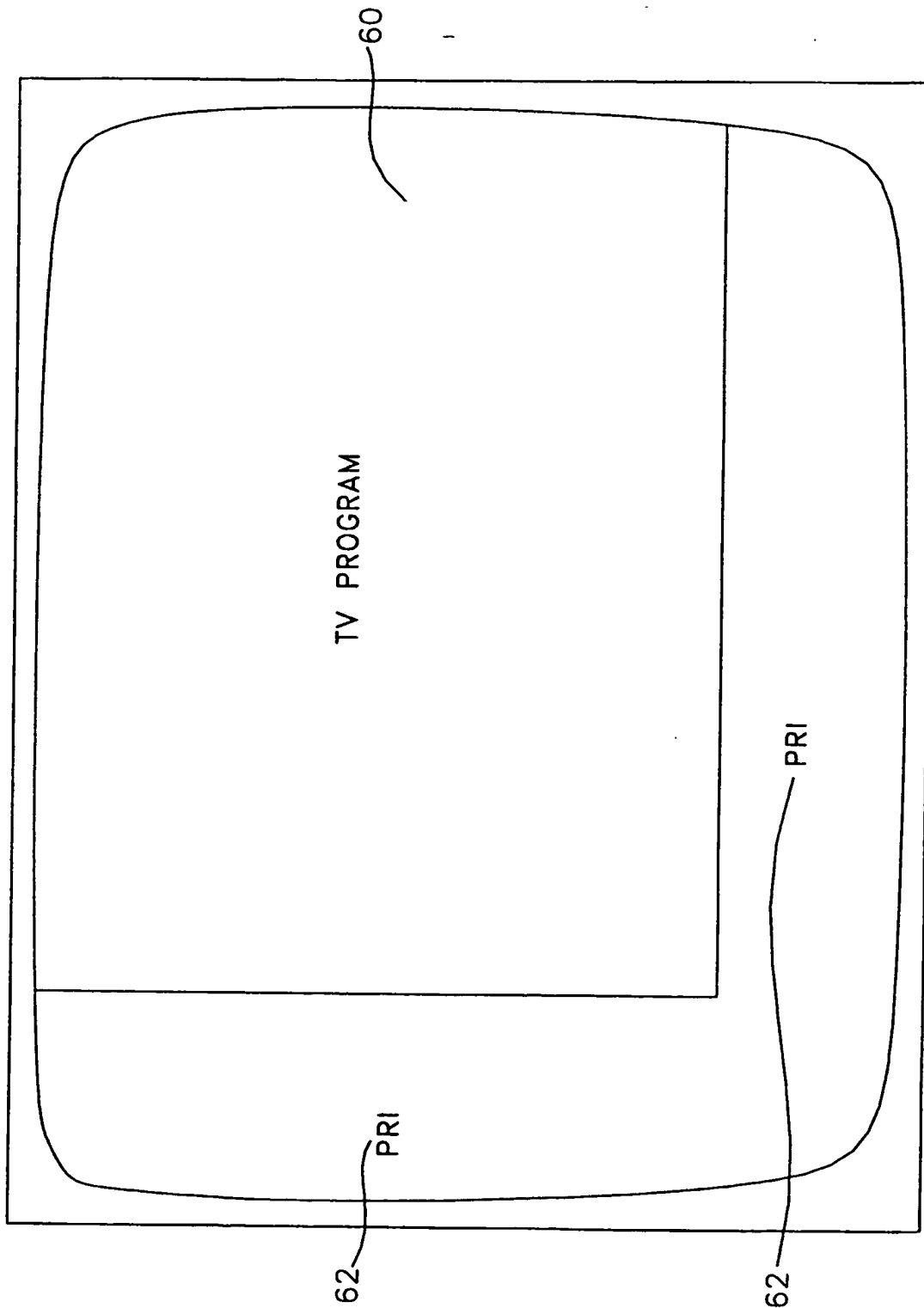
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FIG. 3



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FIG. 4



Form PTO 1449
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Atty. Docket No. ROC920000093US1
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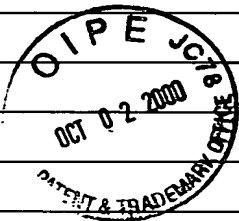
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AA <i>VRS</i>	3,846,819	11/5/74	WARREN		6/29/70
AB <i>VRS</i>	4,390,906	6/28/83	FURUMOTO ET AL.		4/17/81



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